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5 CLAIMS

1. A selection method for selecting from a population of cells one or more selectable genetically transformed cells,

10 wherein the population of cells comprises selectable genetically transformed cells and possible non-transformed cells;

wherein each of the selectable genetically transformed cells comprises a first expressable nucleotide sequence encoding a first expression product;

15 optionally wherein each of the selectable genetically transformed cells comprises an optional second expressable nucleotide sequence encoding a second expression product and/or an optional third expressable nucleotide sequence encoding a third expression product;

20 wherein a component is detoxifiable by the selectable genetically transformed cells by action of the first expressable nucleotide sequence or the first expression product and optionally by action of the optional second expressable nucleotide sequence or the optional second expression product and/or by action of the optional third expressable nucleotide sequence or the optional third expression product;

wherein the component can be present in an amount that is toxic to the non-transformed cells;

the method comprising the step of introducing the population of cells to a medium,

25 wherein the medium comprises the component and/or a precursor thereof and in an amount such that the component is or will be in an amount that is detoxifiable by the transformed cells but wherein the component is or will be in an amount that is toxic to the non-transformed cells;

30 wherein each of the first expression product and the optional second expression product and the optional third expression product is independently selected from an enzyme capable of metabolising galactose or a derivative thereof or a precursor thereof; and

wherein the component and/or the precursor thereof is galactose or a precursor thereof.

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2. A composition comprising a population of cells comprising selectable genetically transformed cells and possible non-transformed cells; and a medium;

wherein each of the selectable genetically transformed cells comprises a first expressable nucleotide sequence encoding a first expression product;

10 optionally wherein each of the selectable genetically transformed cells comprises an optional second expressable nucleotide sequence encoding a second expression product and/or an optional third expressable nucleotide sequence encoding a third expression product;

15 wherein a component is detoxifiable by the selectable genetically transformed cells by action of the first expressable nucleotide sequence or the first expression product and optionally by action of the optional second expressable nucleotide sequence or the optional second expression product and/or by action of the optional third expressable nucleotide sequence or the optional third expression product;

20 wherein the component can be present in an amount that is toxic to the non-transformed cells;

wherein the medium comprises the component and/or a precursor thereof and in an amount such that the component is or will be in an amount that is detoxifiable by the transformed cells but wherein the component is or will be in an amount that is toxic to the non-transformed cells;

25 wherein each of the first expression product and the optional second expression product and the optional third expression product is independently selected from an enzyme capable of metabolising galactose or a derivative thereof or a precursor thereof; and

30 wherein the component and/or the precursor thereof is galactose or a derivative thereof or a precursor thereof.

5 3. A population of cells comprising selectable genetically transformed cells and possible non-transformed cells;

wherein each of the selectable genetically transformed cells comprises a first expressable nucleotide sequence encoding a first expression product;

10 optionally wherein each of the selectable genetically transformed cells comprises an optional second expressable nucleotide sequence encoding a second expression product and/or an optional third expressable nucleotide sequence encoding a third expression product;

15 wherein a component is detoxifiable by the selectable genetically transformed cells by action of the first expressable nucleotide sequence or the first expression product and optionally by action of the optional second expressable nucleotide sequence or the optional second expression product and/or by action of the optional third expressable nucleotide sequence or the optional third expression product;

wherein the component can be present in an amount that is toxic to the non-transformed cells;

20 wherein each of the first expression product and the optional second expression product and the optional third expression product is independently selected from an enzyme capable of metabolising galactose or a derivative thereof or a precursor thereof; and

25 wherein the component and/or the precursor thereof is galactose or a precursor thereof.

4. A selectable genetically transformed cell comprising a first expressable nucleotide sequence encoding a first expression product; and optionally a second expressable nucleotide sequence encoding a second expression product and/or a third expressable nucleotide sequence encoding a third expression product;

30 wherein a component is detoxifiable by the selectable genetically transformed cells by action of the the first expressable nucleotide sequence or the first expression product and optionally by action of the optional second expressable nucleotide sequence or the optional second expression product and/or by action of the optional third expressable nucleotide sequence or the optional third expression product;

5 wherein the component can be present in an amount that is toxic to the non-transformed cells;

10 wherein each of the first expression product and the optional second expression product and the optional third expression product is independently selected from an enzyme capable of metabolising galactose or a derivative thereof or a precursor thereof; and

15 wherein the component and/or the precursor thereof is galactose or a precursor thereof.

5. An organism comprising a selectable genetically transformed cell according to
15 claim 4.

6. A construct for genetically transforming a non-transformed cell to produce a selectable genetically transformed cell;

20 the construct comprising a first expressable nucleotide sequence encoding a first expression product; and optionally a second expressable nucleotide sequence encoding a second expression product and/or a third expressable nucleotide sequence encoding a third expression product;

25 wherein a component is detoxifiable by the selectable genetically transformed cells by action of the first expressable nucleotide sequence or the first expression product and optionally by action of the optional second expressable nucleotide sequence or the optional second expression product and/or by action of the optional third expressable nucleotide sequence or the optional third expression product;

30 wherein the component can be present in an amount that is toxic to the non-transformed cells;

35 wherein each of the first expression product and the optional second expression product and the optional third expression product is independently selected from an enzyme capable of metabolising galactose or a derivative thereof or a precursor thereof; and

40 wherein the component and/or the precursor thereof is galactose or a precursor thereof.

5 7. A vector comprising the construct according to claim 6.

8. A plasmid comprising the construct according to claim 6.

9. A kit comprising a construct according to claim 6 or a vector according to
10 claim 7 or a plasmid according to claim 8 for genetically transforming a non-
transformed cell to produce a selectable genetically transformed cell; and a medium.

10. The invention according to any one of the preceding claims wherein the
selectable genetically transformed cell/cells is/are *in vitro* within a culture.

15 11. The invention according to any one of the preceding claims wherein the
selectable genetically transformed cell/cells is/are *in vivo* within an organism.

12. The invention according to any one of the preceding claims wherein the
20 selectable genetically transformed cell/cells is/are selectable genetically transformed
plant cell/cells.

13. The invention according to any one of the preceding claims wherein an
additional nucleotide sequence is present and wherein the additional nucleotide
25 sequence codes for a nucleotide sequence of interest.

14. The invention according to any one of the preceding claims wherein the
component is present in the medium.

30 15. The invention according to any one of claims 1 to 13 wherein the component
is prepared *in situ* in the cell from a precursor that was present in the medium.

16. A plant prepared from or comprising the invention according to any one of the
preceding claims, preferably wherein the plant is capable of providing a feed,
35 foodstuff to humans or animals.

5 17. A plant according to claim 14 wherein the plant is any one of rape seed, potato or maize.

10 18. A plant comprising one or more heterologous enzymes, wherein the heterologous enzymes are any one or more of galactokinase (EC 2.7.1.6), UTP-dependent pyrophosphorylase (EC 2.7.7.10) and/or UDP-glucose-dependent uridylyltransferase (EC 2.7.7.12).

15 19. Use of any one or more of galactokinase (EC 2.7.1.6), UTP-dependent pyrophosphorylase (EC 2.7.7.10), UDP-glucose-dependent uridylyltransferase (EC 2.7.7.12), UDP-galactose epimerase (EC 5.1.3.2) as a selection means for selecting a genetically transformed plant cell over a non-transformed plant cell.

20 20. Use of any one or more of a nucleotide sequence coding for galactokinase (EC 2.7.1.6), UTP-dependent pyrophosphorylase (EC 2.7.7.10), UDP-glucose-dependent uridylyltransferase (EC 2.7.7.12), UDP-galactose epimerase (EC 5.1.3.2) for providing a selection means for selecting a genetically transformed plant cell over a non-transformed plant cell.

25 21. Use of a prokaryote comprising a nucleotide sequence coding for galactokinase (EC 2.7.1.6), UTP-dependent pyrophosphorylase (EC 2.7.7.10), UDP-glucose-dependent uridylyltransferase (EC 2.7.7.12) and/or UDP-galactose epimerase (EC 5.1.3.2); wherein the nucleotide sequence comprises at least one intron which inactivates the nucleotide sequence or the expression product thereof in the prokaryote, for providing a selection means for selecting a genetically transformed cell over a non-transformed cell.

30 22. Use of any one or more of galactose, galactose-1-phosphate, UDP-galactose, or a derivative thereof, as a selection means for selecting a genetically transformed plant cell over a non-transformed plant cell.

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23. A selection system that uses a component or a precursor therefor or a derivative thereof for selecting at least one genetically transformed cell from a

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5 population of cells, wherein the at least one genetically transformed cell is transformed with a nucleotide sequence which encodes an expression product capable of utilising the component but wherein the component toxic to non-transformed cells, wherein the component and/or the precursor thereof is galactose or a derivative thereof or a precursor thereof.

10 24. A selection method for selecting from a population of cells one or more selectable genetically transformed cells,

wherein the population of cells comprises selectable genetically transformed cells and possible non-transformed cells;

15 wherein each of the selectable genetically transformed cells comprises a first expressable nucleotide sequence encoding a first expression product;

optionally wherein each of the selectable genetically transformed cells comprises an optional second expressable nucleotide sequence encoding a second expression product and/or an optional third expressable nucleotide sequence encoding a third expression product;

20 the method comprising the step of preparing the population of cells by transforming some or all of the cells in an initial population of cells containing non-transformed cells with a heterologous nucleotide sequence so as to form the population of cells containing one or more selectable genetically transformed cells;

25 and

selecting at least one of the selectable genetically transformed cells;

wherein the heterologous nucleotide sequence is any one or more of the first expressable nucleotide sequence, the optional second expressable nucleotide sequence or the optional third expressable nucleotide sequence;

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5 wherein each of the first expression product and the optional second expression product and the optional third expression product is independently selected from an enzyme capable of metabolising galactose or a derivative thereof or a precursor thereof.